

UNITED STATES FOREST SERVICE



National
Night Air Operations
Plan

2013

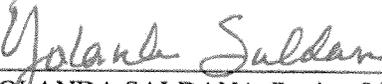
2013 National Night Air Operations Plan

Signatures and Approval

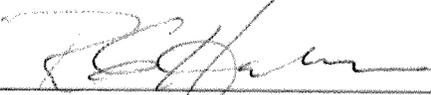
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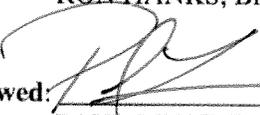
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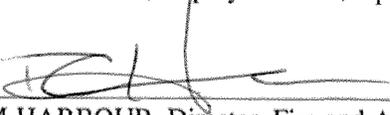
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2013 National Night Air Operations Plan

ADDENDUM

Based on operational considerations, the following changes are made to the 2013 National Night Air Operations Plan.

Change 1.

Section: Operational Planning, Initial Attack, page 10. The third sentence is rescinded and shall now read as follows.

"During night operations a Temporary Flight Restrictions 91.137 (TFR) will be ordered as needed or when requested by the Helicopter Manager; or assigned ATGS."

Rationale – The new language is consistent with cooperator standard operating procedures and FIRESCOPE Night Flying Guidelines. In the Helicopter Night Operations Study, a hazard (H1) was identified when a TFR where appropriate could be used to mitigate the hazard of non-participating aircraft encroaching on fire operations. This was prior to the addition of the night air tactical aircraft to the program, which can also mitigate this hazard while providing airspace coordination. A TFR can be ordered as needed or requested to mitigate the hazard of other non-participating aircraft.

Change 2.

Section: Operational Planning, Limitations. Paragraph v., page 9. This paragraph is rescinded and shall now read as follows.

"v. Helicopter pilot flight time (including day, night and NVG) will not exceed a total of six (6) hours per night."

Rationale – The new language is consistent with cooperator standard operating procedures and FIRESCOPE Night Flying Guidelines resulting in simplified and standardized interagency operations. The Helicopter Night Operations Study does not identify a hazard which specifically references pilot flight hours. Mitigations referring to pilot fatigue are implemented in the contract and this plan. Additionally, full-time use of NVG has not been the case. Un-aided flight (without NVG) has been a larger portion of flights than anticipated. The addition of a night ATGS to the program contributes mitigation to any hazard. The night ATGS provides aerial supervision and intelligence for the helicopter crew reducing workload. The second pilot (specific to Forest Service night helicopter operations) also reduces the workload for the pilot in command. The contract flight crews are in support of this change.

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Introduction

Objective

This document provides information for the use of Forest Service aircraft at night to enhance safety and operational effectiveness through establishment of standardized operational guidelines and minimum qualification standards for the specialized aviation positions.

Authorization

The Pacific Southwest Regional Aviation Group is responsible for update and completion of this guide with oversight provided by National Helicopter Night Flying Operations Steering Committee (HNOSC). Authorization comes from the Chief of the Forest Service and receives leader's intent and direction from the Director of Fire and Aviation Management.

Definitions

Aided Flight: An aided flight is a VFR flight at night where the pilot of an aircraft uses night vision goggles (NVG) in an operational position to maintain visual reference to the surface and to enhance safety through situational awareness of the surroundings.

Nighttime: Defined by 30 minutes after official sunset until 30 minutes before to official sunrise.

Night Flying Guidelines (NFG): FIRESCOPE's interagency document on Night Flying.

Night Vision Goggles (NVG): NVG are a head-mounted, lightweight, and self-contained binocular appliance that amplifies ambient light. NVG's are worn by crew members and are used to enhance the crew member's ability to maintain visual reference to the surface at night. Goggles are an integral part of the overall Night Vision Imaging System, not the entire system.

Night Vision Imaging System (NVIS): A Night Vision Imaging System is the integration of all the elements necessary to successfully and safely operate an aircraft with NVG. The system includes as a minimum:

- i) Operational procedures
- ii) Training, competency and currency requirements
- iii) NVG's and associated equipment
- iv) A NVIS lighting system and other associated aircraft components
- v) Continuing airworthiness requirements

NVG Flight Operation: A flight or operation during any part of which NVG are used by flight crew member(s) in an aircraft which is NVIS equipped and approved for NVIS operations.

NVG Flight Time: The flight time gained by a flight crew member during a NVG flight operation.

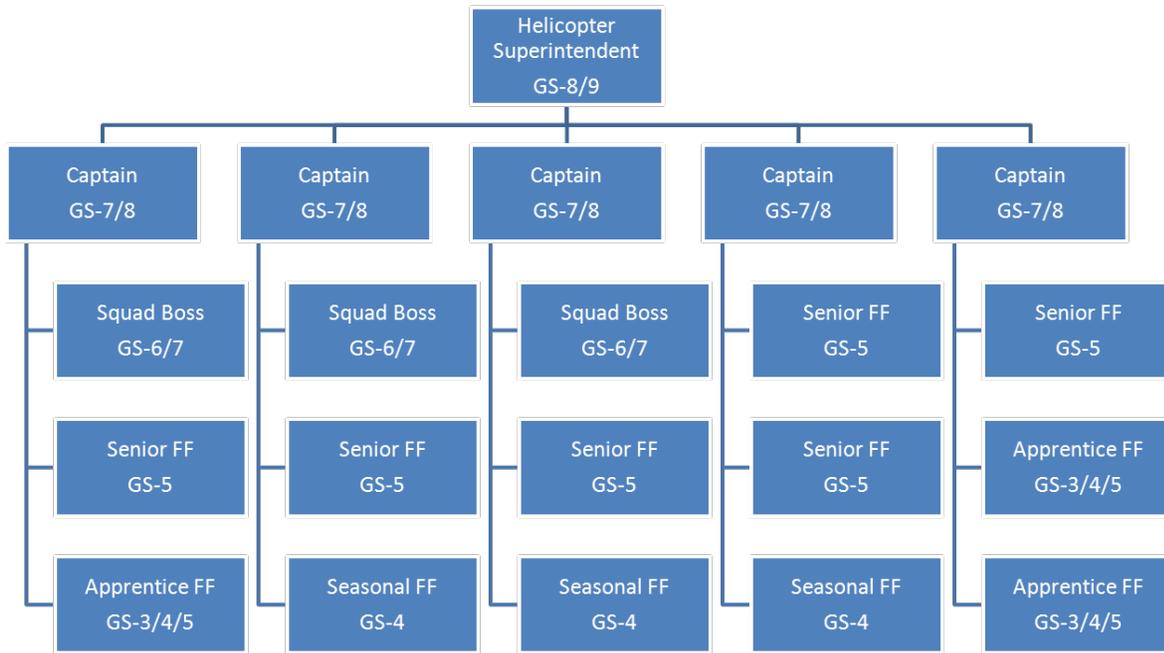
Quality Assurance: The process of verifying or determining whether products or services meet or exceed customer expectations. Quality assurance management includes planning and checking standards while quality controls are specific standards that mitigate risk.

Risk Management: A formal process within the SMS that describes the system, identifies the hazard, assesses the risk, analyzes the risk, and controls the risk. The risk management process is embedded in the process used to provide the product/service; it is not a separate/distinct process.

Unaided Flight: Unaided flight is a nighttime flight conducted without the use of NVG, or a flight with NVG in the non-operational position.

Personnel

Crew Organization



1) Training

- a) High levels of NVIS proficiency, along with a well-balanced NVIS experience base, will help to offset many of the visual performance degradations associated with night operations. NVIS experience stems from proper training coupled with numerous NVG flight operations. An experienced NVIS crewmember should be acutely aware of the NVIS operational envelope and its correlation to various operational effects, visual illusions and performance limitations. Continued exposure during the NVIS recurrent training will help strengthen and solidify this experience base. NVIS currency training needs to include ground evolutions and flight training curriculum.
- b) Currency training shall be conducted at least every 2 weeks for NVIS Crewmembers and NVIS Managers and Pilots.
- c) Initial and Annual NVIS training for every NVIS Manager will be from an industry recognized company and will cover all elements in Appendix 3 in FIREScope's Night Flying Guidelines (NFG).

2) Certification

- i) A list of appropriately trained and documented NVIS Managers and NVIS Crewmembers shall be sent to the Region 5 Helicopter Program Manager for certification.

3) Duties and Responsibilities

- a) **NVIS Helicopter Pilot** is an essential part of any aviation mission and must be made an integral part of the team effort whose objective is flight safety. The Pilot is in command of the aircraft and has ultimate responsibility, under both Federal Aviation Regulations and agency regulations, for the safety of the aircraft and its occupants.
- i) Shall have a current interagency card showing qualification for Night Flying.
 - ii) Shall attend Night Flying training annually using the training syllabus in the NFG (Appendix E).
 - iii) If a night flight has not been accomplished in the last 14 days, the Pilot shall maintain currency by participating in a currency flight which may utilize NVIS crewmembers in ground fill training. This currency training will be documented. See contract for authorization of currency flights for vendor Pilots.
 - iv) In addition to all duties and responsibilities listed in Chapter 2 of the Interagency Helicopter Operations Guide (IHOG), for Night Operations the Pilot will:
 - (1) Complete Night Flying Operational Period Checklist.
 - (2) Complete the GO/NO-GO Checklist for every NVIS Flight Operation.
 - (3) Sign the GO/NO-GO Checklist.
- b) **Helicopter Co-pilot**
- i) Shall meet all experience requirements and training stated in the contract Section C.
 - ii) Shall attend Night Flying training annually using the training syllabus in the NFG (Appendix 3).
 - iii) If a night flight has not been accomplished in the last 14 days, the Co-pilot shall maintain currency by participating in a currency flight which may utilize NVIS crewmembers in ground fill training. This currency training will be documented. See contract for authorization of currency flights for vendor Pilots.
- c) **NVIS Helicopter Manager** - an individual who has essential in-flight duties to ensure the safe operation of the aircraft during an unaided flight or NVG flight operation and/or has firefighter duties specifically on Initial Attack fires. The NVIS Manager is the keystone to the safety and effectiveness of Helicopter Night Operations. In addition to what is stated in the IHOG for duties and responsibilities for Helicopter Manager, the NVIS Manager must:
- i) Use and document risk management practices for all aspects of night operations.
 - ii) Ensure that trained and qualified personnel are assigned to duties.
 - iii) Develop and maintain effective communication with Night Flying cooperators.
 - iv) Work with cooperators to identify processes and procedures for improving Night Flying Operations.
 - v) Be qualified as a Helicopter Manager (HMGB).
 - vi) Attend Crew Resource Management (CRM).
 - vii) Meet their corresponding Position Competencies stated in the Fire and Aviation Management Qualifications Handbook (FSH 5109.17).
 - viii) Receive specialized NVIS training and authorization to perform essential in-flight duties to ensure safe operation of the aircraft during NVG flight operations.

- ix) Complete and sign Appendix A Daily Operational Risk Assessment and NVG Mission GO/NO-GO Checklist.
 - x) To stay current, the individual must perform in the position on a night flying operation every 14 days or complete currency training. Currency training will consist of mission specific elements but can be simulated with the helicopter on the ground.
- d) **NVIS Crewmembers** - In addition to what is stated in the IHOG for duties and responsibilities for Helicopter Crewmember, the NVIS Crewmember:
- i) Shall be a qualified Helicopter Crewmember.
 - ii) Receive specialized training in all subjects outlined in NFG.
 - iii) To stay current, the individual must perform in the position on a night flying operation every 14 days or complete currency training. Currency training will consist of mission specific elements but can be simulated with the helicopter on the ground.
- e) **Air Tactical Group Supervisor (ATGS)** -The ATGS manages incident airspace and controls incident air traffic. The ATGS is an airborne firefighter who coordinates, assigns, and evaluates the use of aerial resources in support of incident objectives. The ATGS must collaborate with ground personnel to develop and implement tactical missions on an incident. The ATGS must also work with dispatch staff to meet the needs of fire management and incident command personnel. On incidents the ATGS will coordinate and prioritize the use of aircraft between several divisions while maintaining communications with operations personnel and helibases. This position at night could be activated on all incidents.
- i) Shall be a qualified ATGS.
 - ii) Receive training in night air operations and be familiar with the limitations and use of night flying helicopters.
 - iii) Shall read and be familiar with FIREScope's NFG.

Equipment

- a) **Night Vision Goggles (NVG's)** are a head-mounted, lightweight, and self-contained binocular appliance that amplifies ambient light. NVG are worn by Pilots and essential aircrew members to enhance the person's ability to maintain visual reference to the surface and see and recognize aerial hazards.
 - i) Night Vision Goggles must meet the requirements stated in the FAA's Technical Standard Order (TSO-C164) which requires the minimum performance standards (MPS) set forth in Section 2 of RTCA Document No. (RTCA/DO)-275 and Minimum Operational Performance Standards for Integrated Night Vision Imaging System Equipment, dated October 12, 2001.
 - ii) All NVIS equipment will be maintained at manufacture's specifications.

Operational Planning

Limitations

The Incident Commander or Incident Management Team needs to be aware of duty and hourly flight limitations.

- i. The only night helicopter mission approved is water/retardant dropping and flights supporting this mission, i.e. transporting essential Helitack Crewmembers to the helispot to fill the helicopter tank and training flights.
- ii. Flights will be conducted under VFR conditions.
- iii. For aircraft equipped with an operational searchlight there is no minimum illumination value that will restrict the helicopter from flying at night.
- iv. Pilot and Co-Pilot shall be well rested and have 10 hours off-duty preceding the start of their shift.
- v. Helicopter Pilot flight time will not exceed a total of (5) hours per night.
- vi. Helibase and helispot location requirements are more stringent than in daylight (see below).
- vii. Pilot night flying currency must be maintained.
- viii. Only ground based water-fill operations from pre-designated or approved helispots will be permitted (no hover-filling).
- ix. Approved helispots are to flown by the Pilot in the daytime prior to use at night. This can be accomplished pre-season and during the season. The only exemption to this requirement is if the helispot is a lighted public airport.
- x. The forests will be responsible for periodic checks and notification of any changes to the helispots.
- xi. The Night ATGS aircraft has no limitations, except agency policy and Federal Aviation Regulations.

Pre-initial attack

Initial Attack Planning should be accomplished prior to the incident so that night flight operations can focus on the mission.

- i) Aerial hazard maps of the forests will be available for use. Electronic devices (not all electronic devices are compatible with Night Vision Imaging Systems) can and should be used in replacement of paper maps.
- ii) Helitack personnel and Pilots shall be familiar with the Night Flying Operations Risk Assessment and Mitigation Plan.
- iii) Cooperation with other agencies in Night Flying is of utmost importance. Cross training and multi-agency training is encouraged to promote standardization and safety.
 - (1) Helitack personnel and Pilots shall participate with cooperators during night flying incident simulation drills.
- iv) Chief Officers and Forest Aviation Officers shall keep telephone numbers of local cooperators that fly helicopters at night for coordination of helibases and helispots during initial attack.
- v) Helitack shall have the capability to monitor Automated Flight Following (AFF) at temporary helibases.

- vi) Ensure standard hose compliment and hose adaptors/fittings are onboard aircraft.
- vii) The Daily Operational Risk Assessment & Go/No-Go Checklist shall be completed.
- viii) Load Calculations will be completed with each shift change and as required by policy.
- ix) Manifests will be completed daily and as required.
- x) When the helicopter is at the host base, the Forest Service shall provide the contractors an adequate area for the pilots to rest.

Initial Attack

Night air operations are an appropriate use for NVIS approved helicopters and Aerial Supervision aircraft. Certain procedures, which vary from daylight air operations, must be followed to assure the greatest margin of safety. During initial attack at night or as needed, a Temporary Flight Restriction 91.137 (TFR) shall be requested if engaged in water dropping.

i. Briefing

- a) At a minimum all pilots and Helitack personnel will be briefed on and understand:
 - i) Night Flying organizational chart and responsibilities.
 - ii) Current and forecasted weather and illumination levels.
 - iii) Flight following procedures.
 - iv) TFR's.
 - v) Other aircraft and their designators.
 - vi) Flight routes.
 - vii) Check-in points.
 - viii) Aerial hazards.
 - (1) Including known migratory bird paths.
 - ix) Communications Plan.
 - (1) Command
 - (2) Air/Ground
 - (3) Air Tactical
 - (4) Ground Tactical
 - x) Contacts.
 - (1) Air
 - (2) Ground
 - xi) Interactions between pilots and ground personnel.
 - (1) Reinforce the need for brevity in radio communications
 - xii) Traffic routes (vehicle, personnel and aircraft).
 - xiii) Helibase personnel assignments.
 - xiv) Pilots warned of dangers of directing drops directly over crews.
 - xv) Reinforce the need to continually assess the risk versus gain and element.

Communications and Coordination

Take-off and Landing Coordinator (TOLC) and Helispot Managers (HESM)

- Responsible for directing and coordination of the take-offs and landings of helicopters at helibase and/or helispots.
- This must be an uncongested/discrete channel.

TOLC and NVIS Parking Tender

- NVIS Parking Tenders are mobile and require an adaptor to connect the flight helmet with their handheld radio.
- NVIS Parking Tender will have available lighted wands to assist in take-offs and landings.
- If it is determined that a NVIS Parking Tender is not necessary, the position will not be filled. This decision will be made by the NVIS Manager with Pilot concurrence.

NVIS Helicopter Manager

- This person is the point of contact for the Incident Commander (IC), Operations Section Chief (OSC) and/or Air Operations Branch Director (AOBD), as well as the dispatch center requesting helicopter missions.
- Control over helicopter operations.
- Coordinates helicopter missions with the helibase, OSC and/or AOBD.

Helicopter and Fireline Coordination

This involves the helicopter(s) and fireline personnel.

- When possible make positive communication with ground Point-of-Contact prior to takeoff.
- Ground radio traffic should be handled by the Division Group Supervisor when possible to eliminate confusion and limit the amount of hand-offs of the aircraft.
- Emergency back-up communication between the helicopter(s) and helibase; can be met by monitoring Air Guard frequency.

Flight Following

- i. Flight Following will be accomplished per California Mobilization Guide (Chapter 28) standards for mission flight following.
- ii. Flight following will be done by check-ins every 15 minutes. This can be accomplished by utilizing Automated Flight Following (AFF) and/or radio contact.
- iii. Flight Following will be documented on the Form HBM-9 or utilizing local forms and procedures for aviation missions.
- iv. During Night Flying Operations there will be an appropriately staffed dispatch center. Only the Angeles, San Bernardino and Monte Vista ECC's are staffed 24-hour per day on a regular basis.
- v. Helitender shall be equipped to monitor AFF when on remote helibases.

Helispots/Helibases

On helispots, one person will be designated as the Helispot Manager. That person is responsible and will ensure the following:

1. All required NVIS positions filled by qualified personnel.
2. Communication plans shall be established and posted.

3. The Pilot shall perform a daylight reconnaissance of the helispot prior to use. The only exemption to this requirement is if the helispot is a lighted public airport.
4. All aerial hazards on incident, helispots and helibase vicinity shall be identified and briefed.
5. Helicopter approach and departure paths established and known.
6. Located in an area free of aerial hazards in the approach and departure paths.
7. At a minimum, three trained NVIS personnel will staff helispots.
8. In an area that allows a minimum of 75 feet separation between rotor tips on multi-aircraft helispots.
9. Traffic control established (vehicle, personnel and aircraft).
10. Approach/departure paths and holding patterns shall be designated and known to all pilots.
11. Dust abatement measures taken.
12. Appropriate size landing site (see IHOG Chapter 8) shall be secured
 - a. 20' x 20' landing pad
 - b. 90' Safety Circle
13. Ground fill operations shall be initiated.
14. Landing site shall be properly illuminated with:
 - a. Four corners of each landing pad should be marked with a yellow or red (not green) cyalume light stick.
 - b. Flashing/emergency vehicle lights may be used as navigational aids or target designators, but should be turned off upon pilot's request.
15. Parking Tenders shall have lighted wands to assist, as needed, in landings and takeoffs.
16. Security measures (traffic control, bystander access, unauthorized personnel) shall be in place.

Water Drops

1. A high level reconnaissance for aerial hazards will be done over every fire.
2. A "dry run" will be made before each series of drops in a new area looking for hazards and personnel.
3. The siren will be used for live runs.
4. Minimum altitude for water-drops will be fifty (50) feet.
5. Tight turns after drops should be avoided to prevent excessive rotorwash on the fire and to avoid spatial disorientation.
6. Water-drops should not intentionally be made directly on fire suppression crews.

Emergencies

For appropriate fire protection and crash-rescue see IHOG Chapter 12. NVIS personnel shall train for emergencies on helispots.

NVIS Personnel shall be trained in the proper use of fire extinguishers and crash rescue tools for aircraft fires. This training should include practical exercises extinguishing small Class B fires with different types of extinguishers.

- i) Crash/Rescue plan prepared and posted.
- ii) All personnel briefed.
- iii) Fire rescue equipment present and operational.

After Action Review

It is essential to learn from mistakes and to capitalize on successes. The price for failure can be exceptionally high and the amount of effort put into successes is often left unrecognized. The objective of the After Action Review is to immediately identify these successes and failures. Once they have been recognized, further exploration allows the team to perfect its skills and be better prepared for future endeavors.

After each fire an After Action Review (AAR) will be completed and documented in a log. An AAR for Aviation Operations follows the standard AAR format of what was planned, what actually happened, why it happened, and what can we do better next time, with some helpful additional talking points.

Safety Management System

Background

The objective of a Safety Management System (SMS) is to provide structure to control risk and assure quality in operations. A formal system of hazard identification and risk management is essential in controlling risk to acceptable levels. System Safety is centered on an organized approach to hazard identification and risk management with intent to minimize the effect on property, financial, environmental, human and societal losses.

Participants in System Safety continually challenge the processes, the culture, and the systems to identify weaknesses that can be mitigated toward the greater purpose of mishap prevention.

The foundation of SMS consists of four “components,” they are **Policy, Risk Management, Quality Assurance and Promotion**. When fully implemented SMS provides and promotes a Positive Safety Culture. The desired positive Safety Culture is informed, flexible, learning, just and a reporting culture that captures the operational knowledge and experience of the employees.

Policy

Per FSM 5720.3 the Forest Service is committed to developing, implementing and continuously improving the aviation program. Our number one job is to protect our most valuable resources-our employees. Unless we do that, we cannot be a world-class leader in natural resource management. Every line officer, manager, supervisor, and employee has the responsibility to manage risk exposure. That means identifying and abating hazards, refusing to accept unnecessary risk, and making risk-related decisions at the appropriate level.

In 2009, the United States Forest Service adopted Aviation Safety Management System (ASMS) as the guiding model to achieve zero accidents. On June 20th, 2011 the Aviation Safety Management Systems Guide became policy and can be found in its entirety at: http://www.fs.fed.us/fire/av_safety/index.html. The ASMS guide should be utilized by all aviation personnel to meet or exceed aviation industry best practices and standards for safety.

Per FSM 5720.2, the primary objective for the Forest Service aviation program is to operate aviation services by completing all missions safely and without mishap. In addition; the Forest Service is required to comply with all Federal Management Regulations (FMR) for aircraft management (41 CFR 102-33), and with all contract and related helicopter operational guides.

Risk Management

It is the responsibility of every Forest Service employee to manage risk to the lowest practical level. The flight crew will refer to the NVG Programmatic Operational Risk Assessment (Appendix F) to ensure that the “best practices standards” are being met.

It is the responsibility of both management and the flight crew to ensure that the mission gained exceeds the risk and expense. The flight crew has the final say if they will accept the mission.

The flight crew is required to complete the following risk measures before engaging in firefighting operations:

1. Night Operations Risk Assessment
2. NVG Mission GO-NO GO Checklist
3. Pre-Flight Weather Operations Checklist
4. Night Operations Checklist for Multiple Aviation Resources

Quality Assurance

Any mishaps or incidents should be reported via the SAFECOM Reporting System to ensure hazards are identified, monitored, mitigated and lessons learned are shared.

The National Office, Regional Office, and Forest will provide oversight, quality assurance and review of Night Flying Operations throughout the field season. The above will be accomplished by the following:

1. Contractor Compliance Audits - at the Regional and National level
2. Operational Reviews – all levels of management
3. Base Reviews – all levels of management

Promotion

Training and communication are the key components that promote a “Learning Culture” to ensure that Night Flight Operations are conducted at an acceptable level of risk. The following will be accomplished by:

1. All Forest Service employees involved in the night flying operations program are encouraged to communicate freely. Lead Up, Lead Down, Lead Laterally
2. All training in the NVG Training Syllabus (Appendix G) will be accomplished
3. New technologies and training will be continually evaluated and considered

Appendices

APPENDIX A. Night Time Operational Checklist

NIGHT TIME OPERATIONAL CHECKLIST			
DATE:		TIME:	SUNSET:
PILOT:	MANAGER:		
CHIN BUBBLE and MIRROR COVERS INSTALLED:	<input type="checkbox"/>	NOTE: REQUEST TFR	
NIGHTSUN INSTALLED and CHECKED	<input type="checkbox"/>	WHEN	
AIRCRAFT CABIN LOOSE ITEM CHECK	<input type="checkbox"/>	ENGAGED IN	
NVG INSTALLED, CHECKED AND FOCUSED	<input type="checkbox"/>	WATER DROPPING	
WEATHER/ILLUMINATION CHECK COMPLETE	<input type="checkbox"/>		
NIGHTTIME OPERATIONAL BRIEFING COMPLETED	<input type="checkbox"/>		
NVG MISSION GO/NO-GO CHECKLIST			
MISSION:	LOCATION:	TIME:	
		GO	NO-GO
MISSION NOTIFIED TO HOST CHIEF OFFICER:		<input type="checkbox"/>	<input type="checkbox"/>
NIGHTTIME OPERATIONAL CHECKLIST COMPLETE: (Top section)		<input type="checkbox"/>	<input type="checkbox"/>
WEATHER BRIEFING/MINIMUMS MET: (Appendix C)		<input type="checkbox"/>	<input type="checkbox"/>
AERIAL HAZARD MAP/MTR REVIEWED:		<input type="checkbox"/>	<input type="checkbox"/>
COMMUNICATIONS PLAN CONFIRMED:		<input type="checkbox"/>	<input type="checkbox"/>
ALTERNATE LANDING SITE/AIRPORT IDENTIFIED: (Appendix C)		<input type="checkbox"/>	<input type="checkbox"/>
OPERATIONAL RISK MANAGEMENT COMPLETED: (Appendix H)		<input type="checkbox"/>	<input type="checkbox"/>
MISSION DETAILS BRIEFED:		<input type="checkbox"/>	<input type="checkbox"/>
PPE DONNED AND BUDDY CHECKED:		<input type="checkbox"/>	<input type="checkbox"/>
SIGNATURE CONFIRMS THAT ABOVE CHECKLIST HAS BEEN COMPLETED			
PILOT:	MANAGER:		
ENGAGEMENT CRITERIA TO BE ASSESSED CONTINUALLY			
<input type="checkbox"/>	Lives are or will be threatened.		
<input type="checkbox"/>	Structures are or will be threatened.		
<input type="checkbox"/>	Resources of significant economic values are or will be threatened.		
<input type="checkbox"/>	Excessively high suppression cost will be prevented.		

APPENDIX B. Pre-Flight Preparation For NVG Use

A. Battery Installation

CAUTION: Be sure the power module is switched off before installing batteries. Ensure only 1.5 Vdc AA Alkaline batteries are used.

1. Push the battery pack doors up (open)
2. Remove the cartridge containing the two 1.5 Vdc AA batteries.
3. Check to make sure the interior of each battery compartment is clean.
4. The required polarity for the battery is illustrated on the inside of the cartridge module.
5. Insert the battery cartridges into the battery pack and close the battery pack doors.

NOTE: Make sure to use a fresh (no-time battery) in the alternate compartment before beginning a mission. Some batteries that have been used still have many hours of life remaining, make sure to install these used or “time” batteries in the primary compartment.

B. Low-Battery/Electrical Check

1. With good batteries installed in both compartments of the low profile battery pack, remove the battery cap on the left compartment.
2. Turn the power switch to the alternate ON position. The low-battery indicator should blink.
3. Return the switch to the OFF position (middle) and replace the battery cap.
4. Remove the battery cap on the right compartment.
5. Turn the power switch to the primary ON position. The low-battery indicator should blink.
6. If the low-battery indicator fails to blink, switch the primary and alternate batteries and repeat this test.
7. With helmet on, select primary power and make sure both tubes are green. Then repeat with secondary power.

C. Attaching the Binocular Assembly to the Helmet Mount Assembly

1. Make sure the power switch is turned OFF.
2. Hold the binocular assembly with both hands at approximately a 30 degree angle so the eyepieces face you. Slide the spring loaded ball bearings of the fore-and-aft assembly into the mount channels until they lock in place.
3. Rotate the binocular assembly to the up and lock position.

D. Preparing the Helicopter for Night Operations

One hour prior to official sunset, (utilizing the interagency aircraft sunrise/sunset chart) the aircrew shall:

1. Inspect the helicopter(s) to ensure that there are no loose items in the cabin.
2. Install the cargo mirror covers, chin bubble blackout mats.
3. Remove the hover-pump/snorkel system from the fixed-tank.

NOTE: Once the aircraft has been configured and inspected, **no** items shall be added or removed from the aircraft without the crew chief and pilot’s approval.

NO EXCEPTIONS.

APPENDIX C. Pre-Flight Weather Observation

(to be completed prior to any nighttime flight)

DATE: _____ PILOT: _____

TIME: _____ MANAGER: _____

A/C: _____

Dispatch Information: _____

WEATHER

ILLUMINATION VALUE: _____

Departure	Ceiling	Visibility	Wind	Temp	Dew Point	Altimeter

Destination	Ceiling	Visibility	Wind	Temp	Dew Point	Altimeter

En Route	Ceiling	Visibility	Wind	Temp	Dew Point	Altimeter

Alternate	Ceiling	Visibility	Wind	Temp	Dew Point	Altimeter

Return	Ceiling	Visibility	Wind	Temp	Dew Point	Altimeter

Notes: _____

APPENDIX D. Helicopter Night Operations Training Plan

NVIS Crewmembers must complete Helicopter Crewmember Training (S-271), Crew Resource Management and the Night Vision Imaging Systems (NVIS) Initial or Refresher Training. Crewmembers must also complete one hour NVIS practical training with the aircraft.

NVIS Crewmembers must complete initial training (8-hour) on the following subjects and a hands-on practical portion, prior to assignment to NVIS operations.

NVIS Ground Training

1. Pre-flight preparations
 - a. Aeromedical factors
 - b. NVIS characteristics
 - c. Terrain Interpretation
2. Operations
 - a. System setup and aircraft interface
 - b. Communication considerations
 - c. Aircraft lighting systems
 - d. Hazards
 - e. Obstacles
3. Weather
 - a. Limitations associated with aided vision
4. Emergency Procedures
 - a. NVIS failure
 - b. IIMC (Inadvertent Instrument Metrological Conditions)
 - c. Communications failure

APPENDIX E. Night Training Exercise

EXERCISE OVERVIEW

Helicopter Night Flying Helispot Operations

FIELD TRAINING

WATER GROUND FILL/field exercise

Objectives

1. Prepare a helispot for safe night operations.
2. Use proper procedures for set up and use of fire hose and brass from fixed water point to helicopter with knowledge of and ability to use lateral line as protection and/or dust abatement
3. Marshall the helicopter using hand signals while having positive radio communication with helicopter through flight helmet adapter.
4. Demonstrate ability to place lights safely around safety circle for use by night vision goggles.

Purpose

The field exercises will help students to perform the duties of the HECM through hands-on application.

This field exercise is not optional and each student will be assessed on their performance of the series of tasks practiced in the field exercise.

Instructional Methods

- Facilitate and Demonstrate operation procedures
- Additional qualified instructors to serve as coaches

Instructional Aids

- Helicopter/Pilot carded to perform the specific exercise
- Outdoor location (large enough to accommodate exercise stations).
- Incident Response Pocket Guide (IRPG)
- Interagency Helicopter Operations Guide (IHOG)

In the event a helicopter is not available, the classroom can be utilized.

Arrange chairs to resemble the seating of a helicopter. For loading and

Unloading HECMs and firefighting equipment.

Exercise

- Helicopter hands-on stations

Evaluation Methods

- Observation
- Student Field Exercise Evaluation Performance
- After Action Review (AAR)

Outline

I. Field Exercise Briefing

II. Exercise Stations

UNIT PRESENTATION

UNIT: 1 - Field Exercise

OUTLINE AIDS & CUES

Present Unit Objectives.

Introduce coaches and their exercise station.

I. FIELD EXERCISE BRIEFING

The purpose of this field exercise day is to provide the students with actual hands-on experience, helicopter night flying operations and to safely conduct helicopter functions they will be required to perform in the field. Students should complete this day with complete confidence in their performance of the duties of a helicopter crewmember.

Coaches will be assigned to each station to assist and oversee the student performance. Coaches will evaluate student's performance by initialing the field exercise evaluation indicating that the function has been performed successfully.

Students will need to successfully complete all items listed on the field exercise evaluation a minimum of two times (twice) to complete the course.

OUTLINE AIDS & CUES

II. EXERCISE STATIONS

Divide students into equal groups and rotate groups through each of the exercise stations. Initial the student's field exercise evaluation indicating the student successfully completed the exercise. Record additional remarks and/or recommendations on the student's field exercise evaluation. Exercise station 1, 2 and 3 could be conducted simultaneously to accomplish both exercises if desired.

Discuss emergency procedures with pilot and students. Ensure everyone involved knows and understands what is expected of them.

OUTLINE AIDS & CUES

Exercise Station 1-Captain's Responsibilities

Purpose: To have the Helitack Captain that will sit in the left forward facing window seat aware of roles and responsibilities in night helicopter water drop missions. Students should leave this station with the ability and knowledge to safely oversee the process from initial fire dispatch, helispot selection site use and management, and hazard identification and assessment.

Time: TBD

Format: Students work in small groups of 3 to 5

Materials Needed:

- HMBG
- IRPG
- Line gear

Instructions:

1. Instructors walk students through the process of manifesting, hazard identification and communication, securing equipment, loading and unloading. Reinforce the importance of ensuring the overall safety of passengers. Have students take turns individually for this exercise.

Instructor interjects as needed to assist student.

Ensure students perform the following:

- Wear appropriate PPE
- Receive mock fire dispatch and select most appropriate fire suppression strategy and tactics based on resources threatened/ weather/ visibility/ fire location
- Demonstrate the ability to co-ordinate with 2 HECM ground support crew drivers ensuring drivers arrive at helispot or other pre-determined location and alerting for any changes
- Place order for adequate sized fire engine for crash rescue purposes
- Make assessment with pilots that helispot will be adequate for needs based on visibility/ weather/ winds/ approach and departure paths and fire behavior
- Unload fire line packs, place light sources around helispot for night vision goggles and to mark 90 foot safety circle, assist with completion of hose lay if necessary
- Ensure positive communication by radio between helicopter and all helispot personnel
- Consult with pilots to help make determination if Captain stays on board aircraft during water dropping missions for purpose of hazard identification and assessment

Exercise Station 2-Parking Tender

Purpose: To have HECMs that sit in the left window aft facing seat (opposite the Captain) prepare for night water helispot operations. Students should leave this station with the knowledge to safely and accurately fill the position of Parking Tender

Time: TBD

Format: Students work in small groups of 3 to 5

Materials Needed:

- HECMs
- IRPG
- Fire Extinguisher
- Crash Rescue Kit

Instructions:

1. Instructors walk students through the process of hazard identification and communication, securing equipment, loading and unloading. Reinforce the importance of ensuring the overall safety of passengers. Have students take turns individually for this exercise.

Instructor interjects as needed to assist student.

Ensure students perform the following:

- Wear appropriate PPE
- Select a safe site at the 1 o'clock position relative to the helicopter with the fire extinguisher and crash rescue kit
- Advise pilot by radio of hazards and wind shifts, use standard hand signals when appropriate
- Maintain security of safety circle by denying entry to non-essential personal and F.O.D.

Exercise Station 3 – Hose Lay for Water Point

Purpose: To have HECMs that sit in the right forward facing window seat prepare for night helicopter water point operations. Students should leave this station with the ability to comfortably and accurately prepare hose lay for water point filling of helicopter fixed tank port by following established procedures.

Time: TBD

Format: Students work in small groups of 3 to 5

Materials Needed:

- HECMs
- Manifest forms for each student.

- IRPG (Helicopter Passenger Briefing)
- Hose (2 2.5 inch 50 foot sections plus 1 2.5 inch 12 foot section) and Brass fittings (2.5 inch cam lock, 1 gated 2.5 inch wye, 2.5 inch nozzle plus hydrant wrench)
- Firefighting hand tools

Instructions:

1. Instructors walk students through the process of manifesting, hazard identification and communication, securing equipment, loading and unloading. Reinforce the importance of ensuring the overall safety of passengers. Have students take turns individually for this exercise.

Instructor interjects as needed to assist student.

Ensure students perform the following:

- Wear appropriate PPE
- Unload hose, brass and firefighting hand tools from right side of helicopter
- Perform hose lay from hydrant with one section of 2.5 inch 50 foot hose. Connect gated wye between this and next section of 50 foot section. Connect fire protection line to other outflow from gated wye. Connect cam lock to helicopter fixed tank.
- Be able to send water to the helicopter fixed tank and shut off water flow when helicopter is full by visual means or listening to radio via flight helmet with adaptor.

OUTLINE AIDS & CUES

- Loading Procedures after Safety Briefing.
 - In-Flight Precautions
 - Unloading Procedures
2. When finished, gather group for a short AAR.
 3. Answer any questions or concerns.
 4. Have group move on to the next exercise station.

End of Exercise

APPENDIX F. Checklist for Multiple Resources

1) Organization

An organization chart has been prepared and posted, showing responsibility for functions by name of person responsible.

All helicopter related positions are assigned to personnel fully qualified for the position.

Pilot, aircraft and support personnel meet agency requirements.

2) Helibase Operations

Operating procedures have been established for helicopter movement around helibase.

Procedures have been established for maintaining aircraft separation in airspace surrounding helibase.

Flight following procedures have been established. A qualified Helicopter Crewmember has been assigned to each helibase landing pad.

Night Air Operations personnel are properly rested.

3) Communications

A communications plan has been completed by the Night Helicopter Manager.

One uncongested air-to-ground frequency has been established.

Radio frequencies and call signs have been posted at the helibase and relayed to the pilots and all helibase personnel.

Designated frequencies on the communications plan have been tested and are fully operational.

All helicopter radios are compatible with the communication plan.

4) Briefings

At a minimum, all Air Operations Division personnel and all pilots have been briefed on, and understand:

Weather/Illumination value

Overhead responsibilities and authority.

General operating procedures.

Flight following procedures.

- Flight routes and check-in points.
- Other aircraft and designators.
- Area flight hazards.
- Radio frequency assignments and communications plan.
- Interactions between pilots and ground personnel.
- Helibase personnel assignments.
- Incident Action Plan review.
- Overhead and pilots warned of dangers of directing drops directly on crews.

5) Landing Areas

- Located in an area with safe approach and departure paths.
- Free of aerial hazards.
- In an area that allows a minimum of 75 feet separation between rotor tips, on multi-aircraft operations.
- Traffic control (vehicle, personnel, aircraft) in place.
- Dust abatement measures taken.
- Proper fueling techniques in place.

6) Crash/Rescue

- Crash/Rescue plan prepared and posted.
- All personnel briefed.
- Fire rescue equipment present and operational.
- Map showing flight routes, drop areas, checkpoints, ground access routes and flight hazards posted.

7) General

- One-half mile minimum visibility in areas of multiple helicopter operations.

APPENDIX G. Operational Risk Management (ORM)

(To be completed by _____ prior to any nighttime flight)

Date _____

Pilot _____

Manager _____

ORM Assessment Chart

Considerations

1. CURRENCY Last Night Flight <3 days 3-7 days >8 days	+0 +3 +8
2. WEATHER Less than 3,000' - 5 sm (anywhere along the route)	+5
3. NIGHT (During any portion of the flight)	+5
4. LOCAL ANF,BDF,CNF,LPF New Location Non-local (Outside normal I.A. area)	+0 +3 +4
5. EARLY MORNING Flight between 0200-0500 (If any portion of the flight to fall within this time window)	+1
TOTAL	

1. Have you been to this destination before? How recently?
2. What are the weather conditions? How confident are you of the weather along the route?
3. Have you thought through the entire mission?
4. Are there any problems with the aircraft that may be a factor for this mission?
5. Do you feel fully rested and capable to accept this mission?
6. Do you have any reservations at all with accepting this mission?

*A **TOTAL** of 20 or greater requires greater operational control or no-go.*